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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/776,221 | 02/12/2004 | Yuji Okawa | SUT-0233 | 4177 |

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WASHINGTON, DC 20036

EXAMINER

YANTORNO, JENNIFER M

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2881

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|-------------------------------|-----------------------------|--|
| Office Action Summary | Application No. 10/776,221 | Applicant(s) OKAWA, YUJI | |
| | Examiner Jennifer Yantorno | Art Unit 2881 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/01/2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 stands rejected under 35 U.S.C. 102(b) as being anticipated by Hodges (US 5,590,787).

Regarding claim 1, Hodges teaches an ultraviolet irradiation method for emitting ultraviolet light toward a work piece (die 14) and a frame (bed 10) holding said work piece through an ultraviolet sensitive adhesive tape (15) applied to a back surface (undersurface 17) of the work piece, said method comprising a step of placing a regulating member (plate 11) as spaced downward from the workpiece held by the adhesive tape prior to emitting ultraviolet light, a step of emitting ultraviolet light to said work piece (Column 3, lines 24-27), and a step of supporting, with said regulating member (plate 11), an under-surface of said work piece held by said frame when the adhesive tape softens under the influence of heat in the step of emitting ultraviolet light and slackening under weight of the work piece.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-6, 9, 12, 13, and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hodges (US 5,590,787), in view of Farnworth et al. (US 6,202,292 B1).

Regarding claim 2, the aforementioned prior art teaches all of the claim limitations with the exception of the frame being ring-shaped having an inside diameter of at least 300 mm. Farnworth et al. explicitly teach a diced wafer disposed upon a carrier tape supported by a circular frame ring (Column 5, lines 16-21). Neither source explicitly teach an inside frame diameter of at least 300 mm, but it is notoriously known in the art that a large-size wafer ranges in diameter from 150 mm to 430 mm, therefore 300 mm would accommodate more than half of large-sized wafers. It would have been obvious to one of ordinary skill in the art at the time of the invention to make the frame round to echo the shape of a round semiconductor wafer and to minimize the frame material waste of making a rectangular frame.

Regarding claim 3, Hodges teaches that the work piece is a die, part of a semiconductor wafer (Column 3, line 20).

Regarding claim 4, the aforementioned prior art teaches an ultraviolet irradiating apparatus for emitting ultraviolet light toward a work piece and a ring-shaped frame holding said work piece through an ultraviolet sensitive adhesive tape applied to a back surface of the work piece. Hodges teach an apparatus comprising a regulating means (plate 11) disposed at a predetermined distance from a back surface of said adhesive

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tape for limiting a downward displacement of said work piece held by said frame when emitting ultraviolet light toward said work piece (Column 3, lines 16-22).

Regarding claim 5, Hodges teaches a distance from an undersurface of said work piece to said regulating means is set to at most 3 mm, specifically, Hodges teaches the undersurface of the work piece is in contact with the regulating means (Column 3, lines 20-22).

Regarding claim 6, Hodges teaches that the regulating means is formed of a glass plate (Column 3, lines 16-19).

Regarding claim 9, Hodges teaches that the regulating means is formed of a plastic penetrable by ultraviolet radiation (Column 3, lines 16-19).

Regarding claims 12 and 13, Farnworth et al. teach a regulating means formed of metal wires arranged in a grid (Figure 5a and Column 8, lines 6-11). Farnworth et al. do not explicitly teach the grid dimensions of claim 13, but it would have obvious to fashion the grid in a size to prevent the work piece from falling through the grid upon ultraviolet radiation application.

Regarding claim 14, Hodges teaches that the work piece is a die, part of a semiconductor wafer (Column 3, line 20).

Claims 7, 8, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hodges (US 5,590,787), in view of Farnworth et al. (US 6,202,292 B1), further in view of Summersgill et al. (US 6,348,999 B1).

Regarding claim 7, the above-mentioned prior art teaches all of the claim limitations except for the regulating glass plate being soda glass or tempax. Hodges

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teaches a regulating means made of a polycarbonate, but Summersgill et al. explicitly teach the use of borosilicate glass lenses in semiconductor irradiation (Column 15, lines 5-9). It would have been obvious to one of ordinary skill in the art to use borosilicate glass as a regulating means for its strength, durability, and reliability

Regarding claim 8, Summersgill et al. teach a borosilicate glass lens that is 1.1 mm thick (Column 15, line 5), which is at least 100 micrometers thick.

Regarding claim 10, Summersgill et al. teach attaching a polyester film to a glass substrate with adhesive tape (Column 11, lines 16-21, lines 61-63).

Regarding claim 11, Summersgill et al. do not explicitly teach a thickness of 150 micrometers for the polyester film, but it would have been obvious to fabricate the film to a required thickness that it does not melt under the ultraviolet light or fold under the weight of the work piece.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hodges (US 5,590,787), in view of Farnworth et al. (US 6,202,292 B1), further in view of Okamoto et al. (US 6,153,357).

Regarding claim 14, the above-mentioned prior art teaches all of the claim limitations with the exception of using a cold filter as a regulating means. Okamoto et al. teach using a cold mirror in semiconductor fabrication and ultraviolet exposure (Column 24, lines 23-24, and Figure 4, item 405). It would have been obvious to one skilled in the art at the time of the invention to use a cold filter as a regulating means to more effectively reflect the ultraviolet light without the addition of excess heat.

Response to Arguments

Applicant's arguments filed 11/01/2005 have been fully considered but they are not persuasive. Applicant argues that the prior art does not teach a regulating member disposed at a predetermined distance that limits a downward displacement of the slack adhesive tape. However, the plate (11) taught by Hodges does just that.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

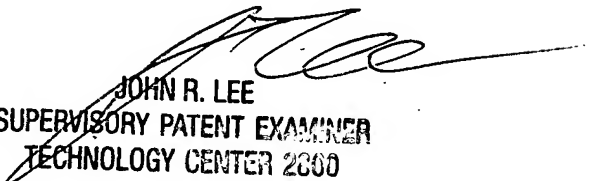
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Yantorno whose telephone number is (571) 272-5918. The examiner can normally be reached on Monday-Friday, 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JY


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